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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,939	12/30/2003	Markus A. Wicki	59457US002	1916
32692	7590	07/11/2006	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			OH, TAYLOR V	
			ART UNIT	PAPER NUMBER
			1625	
DATE MAILED: 07/11/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/748,939

Applicant(s)

WICKI ET AL.

Examiner

Taylor Victor Oh

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                      |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                                                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                                 | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/05 &amp; 7/04</u> . | 6) <input type="checkbox"/> Other: _____                                                |

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The Status of Claims

Claims 1-24 are pending.

Claims 1-24 have been rejected.

**DETAILED ACTION**

1. Claims 1-24 are under consideration in this Office Action.

**Priority**

2. None.

**Drawings**

3. None.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 23 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an acid catalyst, such as, sulfuric acid, nitric acid, hydrochloric acid,

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hydrobromic acid, hydriodic acid, trifluoroacetic acid, does not reasonably provide enablement for all the catalysts known in the field of chemistry. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to include all the catalysts unrelated to the invention commensurate in scope with these claims.

Furthermore, the instant specification fails to provide information that would allow the skilled artisan to practice the instant invention without undue experimentation.

Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation, citing *Ex Parte Forman*, 230 USPQ 546 (BdApl 1986) at 547 the court recited eight factors:

- 1) the quantity of experimentation necessary,
- 2) the amount of direction or guidance provided,
- 3) the presence or absence of working examples,
- 4) the nature of the invention,
- 5) the state of the prior art,
- 6) the relative skill of those in the art,
- 7) the predictability of the art, and
- 8) the breadth of the claims.

In the instant case, the claim encompasses various catalysts. However, applicants' specification provide only three particular exemplified catalyst compounds: for examples sulfuric acid, nitric acid, hydrochloric acid. Furthermore, the catalyst compositions represent an unpredictable

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aspect in the art of organic chemistry . See *Exparte Sizto*, 9 USPQ2d 2081 (Bd. Of App. And Inter. March 1988). Thus, the specification herein have failed to provide sufficient working examples to support the use of various catalysts. Therefore, an appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 6, the terms “ sufficiently” and “ substantially ” are recited.

They are indefinite because the specification does not elaborate clearly what is meant by each term. The carboxylic acid being sufficiently water soluble to allow esterification to occur does not indicate how much sufficiently soluble carboxylic acid has to be in water to allow esterification; two hydroxyl groups having substantially equal reactivity does not explain how exactly each of the two hydroxyl groups has to have the same reactivity. An appropriate correction is required.

In claim 6 , the phrase “ diol comprises ” is recited. This is vague and indefinite because the expression of the term “ comprises ” would mean that there were additional components besides the diol. The examiner recommends to change from “ comprises “ to “has” .

In claims 9 and 10 , the phrase " at least about" is recited. This expression is vague and indefinite because the specification does not point out what is meant by the phrase " at least about". The mere reciting those terms is invalid as indicated in the MPEP:

**A. "About"**

The term "about" used to define the area of the lower end of a mold as between 25 to about 45% of the mold entrance was held to be clear, but flexible. *Ex parte Eastwood*,

163 USPQ 316 (Bd. App. 1968). Similarly, in *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), the court held that a limitation defining the stretch rate of a plastic as "exceeding about 10% per second" is definite because infringement could clearly be assessed through the use of a stopwatch.

However, the court held that claims reciting "at least about" were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term "about." *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991).

***Claim Rejections - 35 USC § 103***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 and 17-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Babler et al (Tetrahedron Letters, 1979, no. 22, p. 1971-74).

Babler et al teaches a selective esterification method of treating diol with a solution of acetic acid in the presence of sulfuric acid at a room temperature to produce the monoacetate (see page 1971, lines 17-19) free from the corresponding diacetate derivatives, which is done by continuous extraction with a suitable nonpolar solvent (see page 1973, lines 1-3). Furthermore, various starting diols compared with glacial acetic acid are described below (see page 1972, table 1):

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TABLE I

Starting Diol <sup>a</sup>	Aqueous Reaction Mixture (ml of H <sub>2</sub> O: ml of glacial acetic acid: ml of conc. H <sub>2</sub> SO <sub>4</sub> )	Time <sup>b</sup>	Solvent Used for Extraction <sup>c</sup>	Product Distribution <sup>d</sup>		
				Diol	Monoacetate <sup>e</sup>	Diacetate
15 mmol of 1,10-decenediol	155:75:0.25	36 hrs	5:1 (v/v) cyclohexane: CCl <sub>4</sub>	39 <sup>f</sup>	60	1
15 mmol of 1,10-decenediol	120:90:0.25	36 hrs	1:1 (v/v) hexane: cyclohexane	22 <sup>f</sup>	75	3
16 mmol of ethylene glycol	160:80:0.50	1 wk	benzene	0	94	6
17 mmol of 1,4-cyclohexanediol <sup>g</sup>	180:45:4.0	4 days	benzene	14 <sup>h</sup>	85 <sup>i</sup>	1
7 mmol of 1,12-dodecanediol	90:150:0.25	30 hrs	cyclohexane	29 <sup>f</sup>	66	5
13.7 mmol of 1,8-octanediol	200:25:4.0	40 hrs	hexane	2	94	4

acid. This mixture was subsequently extracted continuously with the specified nonpolar solvent. <sup>b</sup>The time represents that required for essentially quantitative removal of the starting diol (most of which has been converted to the corresponding monoacetate) from the aqueous reaction mixture using the specific reaction conditions listed in the table. This time should be able to be reduced substantially by increasing the amount of sulfuric acid catalyst heating the aqueous reaction mixture to a moderate temperature (e.g., 50°C), varying the ratio of water-acetic acid (up to a certain point), and using a more efficient extractor. <sup>c</sup>The solvents utilized in the above reactions do not necessarily represent the optimum one for each particular system. The latter can be ascertained only after extensive development of this process. Suitable nonpolar solvents include alkanes, cycloalkanes, aromatic hydrocarbons, halide derivatives of hydrocarbons, or mixtures thereof. <sup>d</sup>The product mixture was isolated by cooling the solvent used for extraction to room temperature. Any unreacted diol present in the product mixture often precipitated out of the nonpolar solvent at this stage and could be recovered by simple filtration. After drying the filtrate over anhydrous K<sub>2</sub>CO<sub>3</sub> and subsequent removal of the extraction solvent under reduced pressure, product ratios were determined by VPC analysis (6'x1/8" SE-30 column). Retention times: diester > monoacetate

(see page 1972, a lower part of paragraph).

To illustrate the utility of this selective esterification process, 1,8-octanediol monoacetate<sup>8</sup> (2, n=6) was converted in two steps to the sex pheromone of the oriental fruit moth,<sup>9</sup> a pest of peach orchards. Oxidation of the unprotected hydroxyl group using pyridinium chlorochromate<sup>10</sup> afforded the previously reported<sup>11</sup> 8-acetoxyoctanal in 86% yield. Subsequent treatment of the latter aldehyde with the ylid derived from *n*-butyltriphenylphosphonium bromide<sup>12</sup> under "salt-free" conditions<sup>13</sup> gave 2-8-dodecenyl acetate,<sup>14</sup> > 98% pure by VPC analysis,<sup>15</sup> in 45% yield.

(see

page 1973, a middle paragraph).



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The instant invention, however, differs from the prior art in that the carboxylic acid has a solubility in water of at least 20 % by weight at 20 °C ; the aprotic solvent has a polarity index between 1.5 and 3.5.

With respect to the solubility of the acetic acid in water, it is well-known that the acetic acid is very soluble in water. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to find the solubility of the acetic acid in water by routine experimentation in order to discover the optimum range of the acetic acid in water for the reaction process.

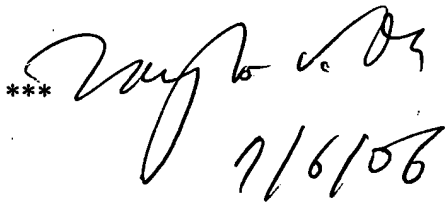
Concerning the polarity index of the aprotic solvent , the reference is silent about it. However, the limitation of , pH, concentration , a polarity index does not impart patentability to a process when such values are those which would be determined by one of ordinary skill in the art in achieving optimum operation of the process. The polarity index of the solvent is well understood by those of ordinary skill in the art to be a result-effective variable, especially when attempting to control selectivity of a chemical process.

Babler et al expressly teaches the selective esterification method of treating diol with a solution of acetic acid in the presence of sulfuric acid at a room temperature to produce the pure monoacetate by continuous extraction with the suitable nonpolar solvent (see page 1973, lines 1-3). The good selection of the polarity index of the solvent can be useful in attempting to control selectivity of a chemical process. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to optimize the continuous extraction with the suitable nonpolar solvent by routine experimentation on the selection of the polarity index of the solvent in order to maximize the desired product for the reaction process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas McKenzie can be reached on 571-272-0670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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